

Design For Recycling

GUIDELINES for packaging

* Polymer resin can be either fossil- or bio-based, virgin or recycled.

**Decorative technologies must not hinder the recognition of the underlying PET-polymer, such as size, print, mass colouration and/or barrier. The following size indications can be considered to ensure the recognition of PET:

- Size of non-PET surfaces on containers > 500 ml: < 70% coverage
- Size of non-PET surfaces on containers < 500 ml: < 50% coverage

The DfR guidelines for plastic packaging are 100% aligned with....

RecyClass

For more info, please visit <https://recyclclass.eu/>

CIRCPACK

by  VEOLIA

Material:

- PET bottle
- PET thermoform
- PP rigid
- PP flexible

PE rigid

Natural&white

- PE flexible
- PS
- Paper & cardboard
- Beverage carton
- Glass
- Steel
- Aluminium



		Yes - Full compatibility	Conditional - Limited compatibility	No - Low (or no) compatibility
Main body	Material*	HDPE; Multilayer PE with HDPE prevalence (LLDPE, LDPE, MDPE) <u>TPO <= 10 % (full olefinic or aliphatic structure); TPS <= 5 %</u>	PP <= 10% 5% < TPS <=10%	Multilayers HDPE with PLA; PVC; PS; PET; PETG; <u>10% < PP <= 30% (- 2 classes); PP > 30% (-3 classes)</u> , TPO (containing rubber, e.g. EPDM)
	Colours	Natural (clear); White	Light colours	Black Inner layer; Black; Carbon Black; Other dark colours
	Size		Items compacted ≤ 5 cm	Items compacted < than 2 cm
	Product residues	A if the index Easy-to-empty is < 5%; B if the index is < 10%	C if the index Easy-to-empty is < 15%	D if index <20%; E < if index 25%; F if index > 25%
	Barrier	<u>EVOH ≤ 6.0%wt + PE-g-MAH tie layers with MAH > 0.1%wt and EVOH:tie layer ratio ≤ 2; Enkase (fluorination); In-mould fluorination; SiOx Plasma coating</u>	<u>EVOH > 6.0%wt + PE-g-MAH tie layers with MAH > 0.1%wt and EVOH:tie layer ratio ≤ 2; EVOH ≤ 1% with any other tie layers</u>	EVOH > 1% with any other tie layers; PA; PVDC; <u>Plasma Fluorination</u> ; Aluminium, Metallisation; PVOH
	Additives	Additives that are unavoidable in processing (stabilizers, antioxidants, lubricants...) and density remains <0.97 g/cm ³	Mineral fillers (CaCO ₃ , talc) not increasing density more than 0,97 g/cm ³	Additives changing material density >1 g/cm ³ ; Flame retardant additives, plasticizers; Bio-/oxo-/photodegradable additive
	Laminating adhesives	Laminating adhesives <u>approved</u> as fully compatible by RecyClass; To be tested if in combination <u>with other barrier material than EVOH</u> Aliphatic polyurethanes < 2.5%	WB acrylics < 2.5%; Laminating adhesives <u>approved</u> as limited compatible by RecyClass; To be tested if in combination with other barrier material than EVOH	Aliphatic polyurethanes (PU) > 2.5 %; Aromatic PU & water based acrylics; Laminating adhesive developed for high thermal applications above boiling and/or for high chemical resistance (to be tested); Any other laminating adhesives (e.g Epoxy).
Attachments	Closure Systems	<u>HDPE; LDPE; LLDPE; MDPE</u>	PP; PET; PETG; PLA; PS (all with a density > 1 g/cm ³); removable aluminium lidding	Non-PO and/or foams with density <1g/cm ³ ; Aluminium; Metal; PVC
	Liners, Seals and Valves	HDPE; LDPE; LLDPE; MDPE; TPO; TPS <= 1 %; <u>Foamed PO</u> ; EVA	PP; TPS; PET, PETG, PLA, PS (all with a density > 1 g/cm ³); Removable silicon with a density > 1 g/cm ³ ;	Non-PO and/or foams with density <1g/cm ³ ; Any other TPE, Aluminium; Metal; Foiled paper; PVC
	Other Components	HDPE; LDPE; LLDPE; MDPE	PP; PET; PETG; PS; PLA all with density >1 g/cm ³ ;	Aluminium; PVC; Glass components; Foams with d < 1 g/cm ³ ;
Decoration**	Inks	Non-bleeding inks compliant with <u>EuPIA Exclusion Policy</u> ; Direct printing for production or expiry date		Bleeding inks; Inks non-compliant with <u>EuPIA Exclusion Policy</u> ; PVC co- and terpolymer binders; any other chlorinated binders; Any other direct printing
	Facestock for Labels	PE	PP, other PO (with density < 1 g/cm ³); PET, PETG, PLA, PS (all with density > 1 g/cm ³); Paper without fibreloss; PO-foamed	Non or partially removable labels; Labels that hinder the recognition of the PE; Non PO Labels (d<1 g/cm ³); Paper labels with fibreloss; In-Mould-Labels; ALU; Metallised labels; PVC
	Adhesives for labels	<u>Releasable</u> in the recycling process		Non removable in the recycling process
	Sleeves	Sleeves in PE (all with density < 1 g/cm ³); <u>Self-separable plastic and cardboard sleeves under mechanical pressure (sorting test mandatory)</u>	Sleeves in PO (with density < 1 g/cm ³); Sleeves in PET, PETG, PET-C, PLA, PS (all with density >1 g/cm ³); Cardboard sleeves without fiberloss (<u>sorting test</u> mandatory)	Sleeves that hinder PE recognition; in non PO-materials with d <1 g/cm ³ ; Cardboard sleeves with fibreloss;; Aluminium; Metallised sleeves; Heavily inked sleeves; PVC
	Other Decorative Tech	Laser marking for production or expiry date	Electroplating on attachments (with density > 1 g/cm ³)	Electroplating on attachments (with density <1 g/cm ³)